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THE PLANT DISEASE REPORTER

Issued by

THE PLANT DISEASE SURVEY, DIVISION OF MYCOLOGY AND DISEASE SURVEY
BUREAU OF PLANT INDUSTRY, UNITED STATES DEPARTMENT OF AGRICULTURE

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The Plant Disease Reporter is issued as a service to plant pathologists throughout the United States. It contains reports, summaries, observations, and comments submitted voluntarily by qualified observers. These reports often are in the form of suggestions, queries, and opinions, frequently purely tentative, offered for consideration or discussion rather than as matters of established fact. In accepting and publishing this material the Division of Mycology and Disease Survey serves merely as an informational clearing house. It does not assume responsibility for the subject matter.

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U.S. DEPARTMENT OF AGRICULTURE

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A DISEASE OF WHEAT NEWLY RECORDED FOR THIS COUNTY

YELLOW-SPOT DISEASE OF WHEAT IN NEW YORK STATE -- M. F. Barrus

During a survey made by the writer in June 1941 in central and western New York, an unusual leaf spot was observed in 35 of the 168 wheat fields examined, in amounts ranging from very slight in 1 field and slight in 7, to considerable in 16, abundant in 7, and very abundant in 4. The leaf spot was found in 19 of the 33 fields inspected in Seneca County and in fewer fields in Wayne, Ontario, Yates, Monroe, Livingston, Genesee, and Wyoming Counties. It was most commonly found near Canoga, Seneca County, where Yorkwin wheat is generally grown, but no other determination of affected varieties was made. The survey was started on June 12 but the disease was not observed until June 18. After that, it was found until June 26 when the survey ended. Most of the fields inspected on the 18th were in the milk, and those on the 26th in the soft-dough, stage. The loss in yield as a result of the disease was not determined but was probably small. This disease was also observed during a wheat survey made in 1940 and has probably affected wheat in the same localities for several years at least.

The spots are oval or elongated, mostly 1 mm. or less in width and somewhat longer, occasionally coalescing to make a larger spot, brown in color with a light-yellow border. The lesion extends completely through the leaf, with about the same size, shape, and color on both sides. These spots increase in size as the season advances to dead brown areas as large as 5 mm. in width and 10 mm. or more long, usually tapering at the ends. The larger spots often coalesce and, where near each other, the intervening tissue dies.

Specimens were taken from some of the fields and examined microscopically later. Spores of a species of Helminthosporium were present, but scanty, on the larger spots of the specimens examined. As the lesions do not resemble those caused by species of Helminthosporium ordinarily present on wheat in this State, specimens were sent to the Office of Mycology and Plant Disease Survey of the U. S. Department of Agriculture for determination. They were referred to Dr. A. G. Johnson who determined the causal fungus to be Helminthosporium tritici-vulgaris Nisikado, not previously reported from this country, which has been described from Japan by Nisikado.1/ (New York State College of Agriculture).

HELMINTHOSPORIUM TRITICI-VULGARIS ON WHEAT IN MARYLAND -- A. G. Johnson

The leaf spot of wheat caused by Helminthosporium tritici-vulgaris Nisik., reported from New York by Dr. M.F. Barrus, is occurring in considerable abundance in the winter wheat breeding nursery of the Division of Cereal Crops and Diseases, Bureau of Plant Industry, U. S. Department of Agriculture, at Beltsville, Maryland. In this nursery it is attacking many hybrids and strains that are resistant to leaf rust. In severity of attack, the disease seems to be causing somewhat more injury than leaf

1/ Nisikado, Yosikazu. Preliminary notes on yellow spot disease of wheat caused by Helminthosporium tritici-vulgaris Nisikado. Ber. Ohara Inst. f. Landwirt. For. 4:103-109. 1929.

rust does on varieties susceptible to it. On the varieties that are especially susceptible to leaf rust, this rust is so abundant that there is but little leaf tissue left for H. tritici-vulgaris to invade, although in some cases the 2 fungi occur on the same leaves. There are some indications that certain of the wheat strains and hybrids may be resistant to both of these fungi. In a limited survey, it has been found that the disease is occurring to some extent also in commercial fields of winter wheat in Montgomery and Howard Counties, Maryland.

Indications are that the disease has been with us for some time and that it has been overlooked because of its resemblance to the leaf spot caused by Helminthosporium sativum Pamm., King, & Bakke. The leaf spots caused by H. tritici-vulgaris, particularly when they are small, have yellower margins and lighter brown centers than those caused by H. sativum. (Division of Cereal Crops and Diseases, Bureau of Plant Industry, U. S. Department of Agriculture, June 15.)

REPORTS AND SPECIMENS REQUESTED — The Plant Disease Survey is anxious to obtain as much information as possible this season regarding the distribution of Helminthosporium tritici-vulgaris in the United States. Collaborators and cooperators are requested to look for this disease on wheat described in the two preceding articles and to send reports of their findings to the Survey. The staff will be glad to examine and report on specimens, and collections for the herbarium will be appreciated.

NOTES ON DISEASES, DECAYS, AND DISORDERS OF TOBACCO IN PUERTO RICO DURING THE 1941-42 SEASON

H. H. Foster, M. Garcia Fortuño
and G. Irizarry Rubio[2]

No accurate and complete tobacco disease survey, such as is fundamental to and essential for the proper development of a disease control program has ever been made in Puerto Rico. Because of the topography of the tobacco districts such a survey would require miles of travel on horseback over mountainous trails. While a general survey of all the principal tobacco districts could be made by car with a minimum of walking to seed beds and fields adjoining or near the highways, the present lack of transportation facilities makes it improbable that in the relatively near future an extensive survey can be made during a single growing season. It is hoped that disease surveys can be gradually extended to include all of the principal tobacco districts.

The following is not a complete list of tobacco diseases in Puerto Rico. It includes diseases, decays, and abnormal types observed at the main station of the Tobacco Institute of Puerto Rico at Rio Piedras and

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1/ In Puerto Rico commercial tobacco seed beds are sown from September 1, through October. The leaf crop is usually harvested from January to March.

2/ Respectively: Pathologist-Geneticist, Assistant Geneticist-Pathologist, and Agronomist - Tobacco Institute of Puerto Rico.

the 2 sub-stations at Caguas and La Plata (see fig. 1), and during occasional field trips to some of the principal tobacco districts.

Tobacco Mosaic (Marmor tabaci var. vulgare Holmes.)-- Typical tobacco mosaic was observed at the Río Piedras, Caguas, and La Plata Stations and in every commercial field inspected. At the 3 stations scattered infection was observed, but in general was considered of minor importance. In addition mosaic was observed in tobacco fields in the Caguas, Cayey, Cidra, Comerío, and La Plata districts. The percentage of infection was estimated to vary from a fraction of 1% to a possible 50 to 75%. In the field with heaviest infection the grower reported that plants were set from a seed bed showing some mosaic symptoms at the time of transplanting. The maturity of the crop, in the respective districts, varied considerably from one section to another and the amount of damage varied with the stage of plant development at the time mosaic developed. In some fields both quality and quantity of tobacco was reduced by mosaic.

Tobacco Mosaic - Yellow Strains (Isolated from type strain) -- Cook (1) has stated that yellow mosaic occurs in Puerto Rico. Bright yellow spots on tobacco leaves infected with common tobacco mosaic have frequently been observed in commercial fields. Several yellow mosaic isolations were made from susceptible F_2 plants during the past season, by methods similar to those described by Jensen (3). In our mosaic-resistance breeding program an estimated 75,000 mosaic-susceptible F_2 plants were pulled from inoculated seed beds. A few of these plants appeared to be infected with a strain of yellow mosaic. Some leaves were almost completely yellow. All of the yellow strains isolated readily induced infection on susceptible varieties tested. At least one yellow strain induced definitely more severe symptoms, on certain tobacco varieties and on certain other host plants, than the parent strains of common tobacco mosaic. Some additional studies are now in progress.

"Mottle Virus" -- During the past season mottle infection was observed in experimental plots at the Río Piedras and Caguas Stations, but not at the La Plata Station. However, scattered mottle infection was observed in some commercial fields in the La Plata area, and in the Cayey, Cidra, and Comerío districts. Usually symptoms were observed only on an occasional plant. Since the mottle virus appears to be transmitted by the wiping method quite as readily as tobacco mosaic it is not known why more infection does not develop occasionally.

In a previous report (2) the writer (Foster) stated that in preliminary inoculation tests under greenhouse conditions no severe leaf malformation had been observed. In more extensive tests during the past year the commercial varieties Virginia No. 9 and Utuado X No. 1 have shown, in some experiments, slight to moderate leaf malformation, also definite stunting. It seems probable that temperature and light affect the amount and severity of symptom expression.

A small field plot, containing Virginia No. 9 and Utuado X No. 1, was inoculated with the mottle virus during the early stage of plant development. Under field conditions the infected plants appeared somewhat yellow and slightly stunted as compared with healthy plants in nearby plots.

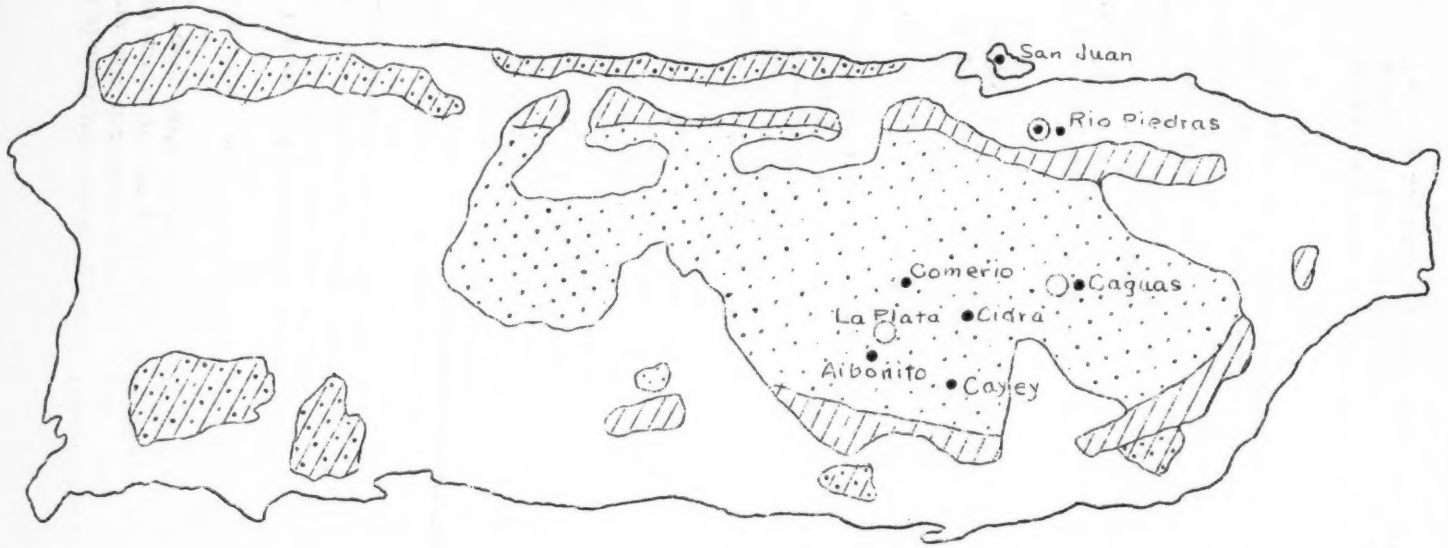

Figure 1. Puerto Rico Tobacco Growing Areas

(Map redrawn, in part, from U.S.D.A. Cir. No.519)

Some leaves from mottle-infected plants were collected, cured, and placed in fermentation with leaves from healthy plants. Following drying and during the early stage of fermentation leaves from infected plants appeared light in color and in weight, with a definite chaffy appearance. No definite conclusions can be drawn from this preliminary test but it does indicate that the mottle virus might be of considerable economic importance if infection should increase sufficiently.

Undetermined - (Virus ?) -- At the Caguas sub-station and in a few commercial fields an occasional severely stunted and malformed plant was observed. Severe curling and distortion of the leaf tissue, accompanied in some cases by necrotic spotting, was noted. Two such plants were transferred to the greenhouse at the Rio Piedras Station and preliminary inoculation tests were made using the wiping method both with and without carborundum powder. No symptoms developed on the inoculated plants. If this diseased condition was due to a virus then it would appear that the virus was not readily transmitted by the wiping method.

Phytophthora parasitica Dastur var. nicotianae Tucker. -- Black Shank or "pata prieta", though not the only soil-borne disease attacking tobacco in Puerto Rico, is undoubtedly one of the most important. The Tobacco Institute has given, and is continuing to give, considerable attention to the black shank problem.

Under Puerto Rican conditions black shank appears to be an important seed bed disease. From observations and preliminary experiments tobacco strains such as Florida Rg. and Puerto Rico 53-A, highly resistant to black shank under field conditions, do not carry a high degree of resistance during the early seedling stage. In one greenhouse experiment in which small seedlings were transplanted to steam sterilized soil "seeded" with a pure culture of Phytophthora, the resistant lines, Rg. and 53-A, were infected and killed as rapidly as susceptible lines. Resistance appears to become effective approximately when plants are of size to transplant to the field. If later experiments verify results from previous preliminary tests, then present resistant lines such as Rg. and 53-A will not solve the black shank seed bed problem in Puerto Rico.

Field resistance to black shank appears to be more readily obtained. In preliminary experiments and later in a randomized block field experiment several lines out of 16 varieties or strains showed a high degree of resistance. In this experiment, basing calculations on identified number of black shank infected plants, there was no significant difference between highly resistant lines, such as Rg. and 53-A, and the commercial varieties Virginia No. 9 and Utuado X No. 1. This does not prove that these 2 commercial varieties are satisfactorily resistant but it does indicate the presence of some degree of resistance under field conditions, which is in line with general field observations.

During the past season black shank was observed in the field plots at the Rio Piedras, Caguas, and La Plata Stations. At the Rio Piedras main station, where a large number of varieties and strains were grown, severe black shank infection was observed on a number of varieties including most of the Turkish strains. Black shank infection of Virginia No. 9 and Utuado X No. 1 varied from an occasional plant to approximately 10%

and was observed in all the tobacco districts previously noted for mosaic. Where other tobacco varieties were grown black shank infection was often greater; in one field of "Nene Sola", a native selection, nearly 50% infection was noted.

Cercospora nicotianae Ell. & Ev. -- Cercospora leaf spot, commonly known as frog-eye, was reported from Puerto Rico by Nolla (4, p. 25-26) in 1932. From symptoms observed this past season it seems probable that several pathogens may induce leaf spotting on tobacco. However, typical frog-eye symptoms were observed in all the tobacco districts inspected, including our 3 tobacco stations. One tobacco grower in the Comerío area was forced to harvest his crop prematurely because severe leaf spotting had advanced to the upper leaves when lower or basal leaves were maturing. The quality of his crop was markedly reduced. This leaf spot infection was the most severe the writers have ever observed. Microscopical examination of some leaf spots collected at the Río Piedras Station showed numerous spores of the Cercospora type, giving additional proof that this pathogen is of primary importance.

Botrytis sp. -- During the past year, in the greenhouse, mature and dying leaves occasionally became enveloped by a gray mold similar to that illustrated by Wolf (5, p. 335-341), who has summarized the literature and described symptoms. This diseased condition was more frequently noted when plants were somewhat crowded. Microscopical examination of the fungus revealed abundant and typical Botrytis spores. This semi-parasitic condition was never serious and upon careful disposal of all old and mature leaves no additional gray mold was observed.

Stem Rot or Rib Rot (?) - Causal Agent undetermined. -- Nolla (4, pp. 26-27) has reported a damping-off in Puerto Rican tobacco barns that appears to be similar to the rib rot observed during the past season. Following a few days of semi-cloudy and rainy weather during the curing period, reports from the Caguas area stated that some tobacco leaves hanging in the curing barns or sheds had developed a rot primarily of the thick midrib and to a lesser extent of the secondary leaf veins. A sample of this rot was observed at the Caguas Sub-station, occurring on a few varieties producing leaves with especially large, thick midribs. This outbreak appeared to be due, at least in part, to unfavorable weather conditions and possibly, to some extent, to improper care and handling of the harvested leaves.

Root Knot of Tobacco - Heterodera marioni (Cornu) Goodey -- During the latter part of the field season rather general nematode infection was observed in one of the experimental plots at the Río Piedras Station. Infection though abundant, was only moderately severe and galls were small to medium in size.

Root knot of tobacco does not appear to be a serious or even common disease in Puerto Rico. This may be due, in part, to 2 factors: the heavy clay soil common to much of the tobacco areas, and one or more drought periods during which the upper soil becomes exceedingly dry.

Deficiency Diseases -- Nolla (4, p. 26) has mentioned the possibility of nitrogen and potash deficiency occurring in the Caguas and Cidra areas. From field observations during the past season nutritional diseases did not appear to be of major importance in any of the tobacco areas surveyed. However, an occasional field showed some plants suffering from nitrogen deficiency and some plants apparently affected by potash deficiency.

Disorders

Numerous non-infectious disorders of tobacco have been observed during the past season, in the greenhouse, seed bed, and field. Some of these disorders appear to be mutations. From conversation with some plant breeders of other crops in Puerto Rico, it is generally believed that mutations often occur more frequently under tropical conditions than in the temperate zone of the mainland.

Wolf (5, pp. 61-109) has brought together much of the literature dealing with these conditions and has described the more common and important malformations, monstrosities, and "off type" conditions. Some of the more common disorders observed will be briefly mentioned. A few are receiving additional study since there may be some relationship to our present breeding program.

Albinism -- A few tobacco seedlings were observed to carry this phenomenon. One Ambalema plant was particularly striking since occasional leaves were, in part, a creamy white color. This plant was potted and observed to maturity. The white leaf pattern did not occur on every leaf but continued rather frequently to the uppermost leaves. The color was always the same, a striking creamy white.

Forked and Trifid Tipped Leaves -- Leaves in which the midvein was branched, with 2 or 3 tips, were occasionally observed.

"Beaker Shaped Leaves" -- This phenomenon in which the entire leaf appeared cup-shaped was primarily observed in small seedlings. Later leaves appeared to develop normally and this condition was only occasionally observed in large seedlings or mature plants.

Absence of Growing Point -- Occasionally young tobacco seedlings were observed in which growth had prematurely terminated and the main stem ended in the uppermost leaf. A number of such abnormal plants were transplanted to the field plot for further observations. Whenever these plants survived a new growing point developed from the uppermost leaf or the tip of the original main stem.

Dwarfing and Multiple Branching -- In a few commercial fields a large number of dwarf type plants were observed. Frequently the main stem had ceased to develop as one main stalk, but had divided to form 2 or 3 branches with flower heads often developing at the height of 2 or 3 feet. These plants did not appear stunted or dwarfed because of lack of nutrients, but appeared to be mutations or off-type plants.

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(1). Cook, M. T. Enfermedades de las plantas económicas de las Antillas. (Monografia de la Universidad de Puerto Rico) 1939.
(2). Foster, H. H. Notes on tobacco diseases in Puerto Rico. Plant Dis. Reporter 25:238-242. 1941.
(3). Jensen, J. H. Isolation of yellow-mosaic viruses from plants infected with tobacco mosaic. Phytopath. 23: 964-974. 1933.
(4). Nolla, J.A.B. Las enfermedades del tabaco en Puerto Rico. Dept. Agr. and Commerce, Ins. Exp. Sta. Puerto Rico. Bull. 39. 1932.
(5). Wolf, F. A. Tobacco diseases and decays. Duke University Press. 1935.

(DIVISION OF PATHOLOGY AND GENETICS, TOBACCO INSTITUTE OF PUERTO RICO, RIO PIEDRAS, P.R.).

ADDITIONS TO THE HOST INDEX OF FUNGI OF MOUNT SHASTA, CALIFORNIA - II

W. B. Cooke

The following list will supplement 2 previous lists published in the Plant Disease Reporter (Suppl. 123, Oct. 1, 1940; 25 (2): 61-62. Feb.1, 1941). Some of this material has been checked by authorities listed in the first list.

Material cited as Leptosphaeria juncicola Karst. in the first list should be corrected to L. junciseda Karst.

The following citations are based on collections made during the summer of 1941, as well as, in some instances, material collected during 1937, 1938, 1939, and 1940. This list will bring the entire number up to 338 records of 251 species of fungi found to date on Mount Shasta. A few of these records were made outside the geographic area described as Mount Shasta proper, that is, the area above 4000 feet; however, the extra-limital records were made in or in the vicinity of Mount Shasta City (formerly Sisson, 3550 ft.) and mostly on hosts that occur above 4000 feet.

In addition to the regular depositories of these specimens: the Herbaria of the University of California and the University of Cincinnati, and the Mycological Collections, Division of Mycology and Disease Survey, Bureau of Plant Industry; duplicates of many will be placed at the New York Botanical Garden Herbarium and the Farlow Herbarium. Certain species will be represented in the next fascicle of the writer's exsiccati "Mycobiota of North America."

ABIES CONCOLOR Lindl. & Gord.
Cryptoporus volvatus (Pk.) Hubbard
Dasyscypha arida (Phil.) Sacc.
Echinodontium tinctorium Ell. & Ev.
Fomes pinicola (Sw.) Cke.
Guepiniopsis alpinus (Tracy & Earle) Brasfield
Polyporus abietinus Fr.
Polyporus leucospongia Cke. & Harkn.

ABIES MAGNIFICA var. SHASTENSIS Lemmon
Fomes officinalis (Fr.) Lloyd
Fomes pinicola (Sw.) Cke.
Lasiosphaeria vermicularia (Nees) Cke.
Lenzites sepiaria (Wulf.) Fr.
Trichosphaeria solaris (Cke. & Ell.) Ell. & Ev.

AGOSERIS GRANDIFLORA (Nutt.) Greene
Puccinia hieracii (Schum.) Mart.

AGROSTIS THURBERIANA Hitchc.
Hendersonia sp.
Leptosphaeria microscopica Karst.
Pleospora herbarum (Pers.) Rab.

AGROSTIS SP.
Cladosporium herbarum (Pers.) Lk.
Leptosphaeria microscopica Karst.
Leptosphaeria vagans Karst.
Mycosphaerella tulasnei Jacz.

ANEMONE OCCIDENTALIS Wats.
Pleospora permunda (Cke.) Sacc.
Scelobelonium melanosporum (Rehm) Höhn.

ARABIS PLATYSPERMA Gray
Pleospora permunda (Cke.) Sacc.

ARCTOSTAPHYLOS NEVADENSIS Gray
Aleurodiscus sp.
Cryptostictis arbuti (Bonar) Zeller
Gloniella lapponica Karst.

ARCTOSTAPHYLOS PATULA Greene
Polyporus leucospongia Cke. & Harkn.

ARNICA VISCOSA Gray
Leptosphaeria doliolum (Pers.) Ces. & DeNot.
Pleospora anthyllidis Auersw.
Pleospora herbarum (Pers.) Rab.
Titaea sp.

ASTER SHASTENSIS Gray
Coleosporium solidaginis (Schw.) Thüm.
Heteropatella alpina (Ell. & Ev.) WBC
Pyrenophora hispida (Niessl) Sacc.
Septoria sp.

BRICKELLIA GRANDIFLORA (Hook.) Nutt.
Puccinia subdecora Syd. & Holw.

BROMUS TECTORUM L.
Ustilago bromivora (Tul.) Fisch.

CALOCHORTUS NUDUS Wats.
Puccinia calochortii Pk.

CAREX KELLOGGII W. Boott.
Puccinia caricis (Schum.) Schroet.

CAREX SPECTABILIS DEWEY
Pleospora elynae (Rab.) Ces. & DeNot.

CAREX SP.
Hendersonia distans Brun.
Leptosphaeria vagans Karst.

CASTILLEJA MINIATA Dougl.
Heteropatella alpina (Ell. & Ev.) WBC
Typhula sp.

CASTILLEJA PINETORUM Fern.
Pleospora permunda (Cke.) Sacc.
Pyrenophora fenestrata Pk.

CEANOTHUS VELUTINUS Dougl.
Hymenochaete tabacina (Sow.) Lév.

CHRYSOTHAMNUS BLOOMERI var. ANGUSTATUS Gray
Teichospora megastega Ell. & Ev.

CRATAEGUS DOUGLASII Lindl.
Gymnosporangium libocedri (P.Henn.) Kern

CYCLADENIA HUMILIS Benth.
Pleospora permunda (Cke.) Sacc.

EUPATORIUM OCCIDENTALIS Hook.
Pleospora herbarum (Pers.) Rab.

FRITILLARIA ATROPURPUREA Nutt.
Phyllosticta sp.

ELYMUS GLAUCUS Buckl.
Puccinia glumarum (Schmidt) Erikss. & Henn.
Scolecotrichum graminis (Pers.) Fckl.
Selenophoma donacis (Pass.) Sprague & Johnson var.
Urocystis agropyri (Preuss.) Schroet.

GODETIA QUADRIVULNERA (Dougl.) Spach.
Puccinia vagans (DC.) Arth.

HOLCUS LANATUS L.
Puccinia rubigo-vera (DC.) Wint. (with Darluca filum (Biv.) Cast.)

HYPERICUM FORMOSUM var. SCOULERI Coulter
Uromyces hyperici (Spreng.) Curt.

JUNCUS BALTICUS var. MONTANUS Engelm.
Cladosporium herbarum (Pers.) Lk.
Leptosphaeria caricinella Karst.
Leptosphaeria junciseda Karst.
Leptosphaeria sp.
Lophium sp.
Mycosphaerella tulasnei Jacz.
Pyrenophora trichostoma (Fr.) Fckl.

JUNCUS ORTHOPHYLLUS Coville
Cladosporium herbarum (Pers.) Lk.
Leptosphaeria culmorum Auersw.
Leptosphaeria junciseda Karst.
Leptosphaeria michotii (West.) Sacc.

JUNCUS PARRYI Engelm.
Aposphaeria mollis (Lév.) Sacc.
Duplicaria acuminata Ell. & Ev.
Metasphaeria sepalorum Vleugel

LATHYRUS LANSZWERTII var. ARIDUS (Bradsh.) Jeps.
Macrosporium puccinioides Ell. & Anderson
Uromyces fabae (Pers.) DBy. (with Darluca filum (Biv.) Cast.)

LIGUSTICUM GRAYI C. & R.
Pleospora permunda (Cke.) Sacc.
Pleospora sp.
Synchytrium aureum Schroet.

LINUM MICRANTHUM Gray
Melampsora lini (Pers.) Lév.

LUPINUS ALBICAULIS var. SHASTENSIS C. P. Smith
Pleospora balsamorhizae Tracy & Earle
Pleospora gigaspora Karst.

LUPINUS OBTUSILOBUS Heller
Leptosphaeria sp.
Mycosphaerella aquilegiae Ell. & Galw.
Pleospora amplispora Ell. & Ev.
Pleospora gigaspora Karst.
Rhynchostoma exasperans Karst.
Septoriella sp.

OXYRIA DIGYNA (L.) Hill
Puccinia oxyriae Fckl.

PEDICULARIS DENSIFLORA Benth.
Ramularia obducens Thüm.

PENTSTEMON GRACILENTUS Gray
Heteropatella alpina (Ell. & Ev.) WBC
Scelobelonium melanosporum (Rehm) Höhn.

PENTSTEMON MENZIESII var. DAVIDSONII (Greene) Piper
Puccinia palmeri Diet. & Holw.

PHLEUM ALPINUM L.
Cladosporium herbarum (Pers.) Lk.
Leptosphaeria vagans Karst.
Mycosphaerella tulasnei Jacz.

PINUS LAMBERTIANA Dougl.
Fomes officinalis (Fr.) Lloyd

PINUS PONDEROSA Dougl.
Dacrymyces deliquescens (Bull.) DBy.

POA PRATENSIS L.
Ascochyta sp.
Dendryphium sp.
Puccinia poae-sudeticae (Westend.) Jørstad

POTENTILLA GRACILIS spp. NUTTALLII (Lehm.) Keck
Phragmidium ivesiae Syd.

PRUNUS DEMISSA(Nutt.) Dietr.
Septoria pruni Ell.
Taphrina confusa (Atk.) Giesenhag.

PRUNUS EMARGINATA (Dougl.) Walp.
Polyporus elegans (Bull.) Fr.

PUCCINIA RUBIGO-VERA (DC.) Wint.
Darluca filum (Biv.) Cast.

SITANION HANSENII (Scribn.) J. G. Smith
Puccinia pattersoniana Arth.
Scolecotrichum graminis (Pers.) Fckl.
Selenophoma donacis (Pass.) Sprague & Johnson var.

SITANION HYSTRIX (Nutt.) J. G. Smith
Selenophoma donacis (Pass.) Sprague & Johnson var.

STEPHANOMERIA LACTUCINA Gray
Puccinia harknessii Vize

TRISETUM SPICATUM (L.) Richt.
Cladosporium herbarum (Pers.) Lk.
Leptosphaeria microscopica Karst.
Leptosphaeria vagans Karst.
Mycosphaerella tulasnei Jacz.

TRITELIA IXIOIDES var. ANALINA (Greene) Hoover
Heterosporium **allii** Ell. & Martin

TSUGA MERTENSIANA (Bong.) Sarg.
Herpotrichia nigra Hart.
Polyporus leucospongia Cke. & Harkn.

VICIA CALIFORNICA Greene
Uromyces fabae (Pers.) DBy.

UROMYCES FABAE (Pers.) DBy.
Darluca filum (Biv.) Cast.

ON CHAPARRAL STICKS:
Polyporus elegans (Bull.) Fr.

ON GRASS, AGROSTIS, JUNCUS AND OTHER DEBRIS:
Scelobelonium melanosporum (Rehm) Höhn.
Typhula sp.

ON, AND HYPOGAEUS UNDER, DUFF AND HUMUS:
Abstoma reticulatum
Agaricus arvensis Fr.
Amanitopsis vaginata Fr.
*Arcangeliella lactarioides Zeller
Astraeus hygrometricus (Pers.) Morg.
Boletus albidus Rocques ssp. eupachypus Konrad
Boletus frustosus Snell
Boletus miniato-olivaceus Frost
Bovista pila B. & C.
Calvatia sculpta Hark.
Cortinarius cotaneus Fr.
Crucibulum vulgare Tul.
*Dendrogaster elasmomycetoides Zeller
*Elasmomyces echinosporus Z. & D.
*Endogone lactiflua Berk
*Gautieria monticola Harkn.
Hygrophorus vernalis A.J.Smith
*Hymenogaster remyi Z. & D.
Hypholoma fasciculare Fr.
*Hysterangium phillipsii Harkn.
*Hysterangium separabile Zeller
*Macowanites magnus Parks
*Melanogaster variegatus (Vitt.) Tul.
Montagnites sp.

Paxillus panuoides Fr.
*Rhizopogon brunescens Zeller
*Rhizopogon exiguus Zeller
*Rhizopogon provincialis Tul.
Secotium longipes Zeller
Secotium pingue Zeller
Secotium polytrichoides Zeller
Sedecula pulvinata Zeller
Tulostoma tuberculatum White

The rich hypogaeus (*) mycobiota of the higher elevations of Mount Shasta indicates the possibility of similar conditions in high elevations throughout North America. Field workers would do well to investigate this condition farther.

Species listed as "sp." were collected in either meager amounts, or are being published as new species, or are being studied more carefully by experts.

BRIEF NOTES ON PLANT DISEASES

CONTROL OF SILVERTOP OF FESCUE BY BURNING: Studies on commercial seed production of Festuca rubra fallax by the Department of Agronomy at this station revealed the fact that silvertop was increasing to the extent of being a limiting factor. In 1941 preliminary control measures were undertaken by Dr. C. C. Wernham of the Botany Department. Check rows of a replicated fertilizer plot were treated as follows: lethane-derris dust, sulfur dust, burning, and combinations of these dusts with and without burning. Burning was done as soon as the grass dried in the spring and before spring growth appeared. The dusts were applied on burned and unburned rows at later intervals. Results showed clearly that treatment of single rows was worthless owing to spread of the disease from adjacent rows. However, where 4 rows were burned or dusted, the burning gave marked control of the disease. The yield was below normal, but unburned rows were so severely affected that harvesting for yield data was abandoned. The season was unusually dry and it was difficult to judge whether the subnormal yield on the burned 4 rows was due to injury by burning, dry weather, or both.

At this point the problem was turned over to the writer as a doctorate thesis. This spring several treatments including burning were again applied. The Department of Agronomy burned complete replicates in another experimental plot which showed 1 to 2% silvertop last year. The season has been unusually moist and seed production plentiful. Of the treatments tried, burning in the spring just previous to or at the time of new leaf growth has given outstanding results and commercial control of silvertop. More complete data will appear in a later publication. It was thought advisable, in view of commercial seed shortage, to release this information at this time in order that autumn plantings for seed production need not be curtailed because of the threat of silvertop.

I am indebted to Professor Thornton of Agronomy and Doctor Wernham of this department for much help and advice. (Harry L. Keil, Graduate Stipend Scholar, Department of Botany, Pennsylvania State College).

WHEAT LEAF RUST IN SOUTH DAKOTA: Leaf rust [Puccinia rubigo-vera tritici] of wheat was collected at Highmore on May 27. The U.S.D.A. spring wheat rust nursery was at the 5-leaf stage and leaf rust occurred on all the varieties except Triticum timopheevi. This is an unusually early occurrence of leaf rust on spring wheat in central South Dakota, and antedates the occurrence of leaf rust on spring wheat at Brookings in 1941 by at least one week. A few pustules were found at Brookings this morning. Wheat plantings were early but growth in May was slow. The last week has been favorable for rust infection. (W. F. Buchholtz, South Dakota Agricultural Experiment Station, June 1).

A WOOD-DESTROYING FUNGUS ON GUM TIES AT JACKSONVILLE, FLORIDA: During the early part of March 1942 in a treating yard in Jacksonville, a large number of red or sweet gum [Liquidambar], tupelo [Nyssa], and black gum [Nyssa] ties were severely attacked by a wood-destroying fungus that appeared very suddenly and apparently in large quantities. The fungus proved to be Stereum rugosiusculum Berk. Great sheets of the fruiting bodies as well as shelf-like structures appeared on the ends of the ties apparently over night. In addition to this wood-destroying fungus, the ends and sides were covered with the molds that are usually to be found on gum ties in warm and rainy weather but that do not destroy the wood fibres.

The oldest of these ties were cut about the middle of December 1941 and were shipped into a well kept yard and piled according to the usual railroad standards within a week or 10 days after cutting. Thus, the ties were sap green when they arrived on the yard. During the latter part of December, January, and February there was almost continual rainfall in the southeastern United States, and the ties had little opportunity to dry. Many of them had 100% water in the interior. To all intents and purposes the ties looked all right on Thursday, March 12, except for the black molds. However, on Monday morning, March 16, the fruiting bodies appeared in large numbers on the tie piles of greatest age, that is, the December-cut ties. It rained during the early part of the week, but the weather cleared about March 19, and from then on the appearance of the sporophores became less and less. In order to meet this situation it was decided to treat all of the ties immediately. Before treatment both ends of each tie were sawed off at the adzing machine and those showing decay were thrown aside. At the end of 2 weeks all of the affected tie piles had been disposed of by treatment, and no fungus has appeared since that time.

One of the interesting factors connected with this sudden epidemic is that 100 miles or so north of Jacksonville, where similar ties were piled, there was no sign of the Stereum or of decay. (Hermann von Schrenk, Chesapeake & Ohio Railway Co., St. Louis, Missouri, May 11).

RUST ON SAPODILLA IN FLORIDA: The sapodilla or chicle tree (Achras zapota L.) is cultivated to a limited extent in Southern Florida as an ornamental and for its highly esteemed fruit. The tree has been practically free of fungous diseases in this locality up to the present time.

In January 1942 a rust was observed producing red to purplish red spots on the leaves of many seedling sapodilla trees growing in a windbreak row on the grounds of the Sub-Tropical Experiment Station near Homestead, Florida. The rust was tentatively identified as Uredo sapotae Arthur and Johnston, a species apparently not heretofore reported from the mainland of the United States. Specimens were sent to the Florida Agricultural Experiment Station's herbarium at Gainesville, where Mr. Erdman West identified them as Uredo sapotae. Previous reports on this species give its range as the Bahamas, Cuba, and the Dominican Republic.

Considerable variation in susceptibility to rust infection occurs on the seedling sapodilla trees growing at the Station. Some are practically free of rust infection while others develop rust pustules on nearly all the mature leaves. Even in the latter cases, however, the disease appears to be of minor importance, since the rust infection does not seem to cause serious defoliation. (George D. Ruehle, Sub-Tropical Experiment Station, Homestead, Florida).

VARIOUS PLANT DISEASES OBSERVED IN PENNSYLVANIA: Yesterday I finished a survey of barley fields, in Lebanon, Cumberland, Franklin, Mifflin, Juniata, and Perry Counties. In most counties where seed treatment has been carried on yearly for the last 5 or 6 years, it is almost impossible to find covered smut [Ustilago hordei] in barley fields. There was only a trace of loose smut [U. nuda, etc.]. In fact I found the least amount of smut this year that I have ever found since coming to Pennsylvania.

In Adams County on June 2 I was called to a canning factory to inspect tomato seedlings. In about an acre about 45 to 50% of the plants had the leaf stage of alternaria canker [A. solani]. The excessive rain has done a great deal of damage to the tomato industry. Only about 1/2 to 2/3 of the plants are in the field and many of them have been damaged by the rain. Even if it clears up at once it will be a week to 10 days before people can get into the field to finish planting.

Yesterday I saw $36 worth of southern-grown tomato plants that had been in the hands of the farmer for 10 days. Part of the time they were in baskets, but now they are heeled in and the tops look as if a fire had gone through them.

In Adams County I have found 3 conditions in cherry orchards that seem to be distinct virus diseases. One is a yellowing of the leaves that looks like cherry yellows. These yellow-leaved trees are scattered through cherry orchards all over the county. Under the trees the leaves have fallen as they would in autumn. (George L. Zundel, Pennsylvania State College, June 5).

CHECK LIST REVISION

Freeman Weiss

ROSMARINUS (LABIATAE)

ROSMARINUS OFFICINALIS L., ROSEMARY. Evergreen subshrub of Mediterranean region, cult. for aromatic foliage and oil, also as a hedge plant; Zone VI.

Phymatotrichum omnivorum (Shear) Dug., root rot. Ariz.

ROYSTONEA (PALMACEAE)

ROYSTONEA spp., especially R. REGIA (H.B.K.) O.F.Cook (R. floridana O.F.Cook), CUBA ROYAL PALM. Columnar feather palm of tropical America, planted for ornament and as a street tree in S.Fla.; also R. BORINQUENA O.F.Cook PUERTO RICO ROYAL PALM, used for construction and ornament in P.R. Juvenile forms are grown as conservatory plants.

Alternaria sp., leaf spot. Fla.
Colletotrichum gloeosporioides Penz., anthracnose, petiole spot. Fla., Texas.
Diplodia sp., leaf spot. Fla.
Epicoccum neglectum Desm., leaf spot. Fla.
Graphiola phoenicis (Moug.) Poit., flase smut. Fla.
Helminthosporium sp., leaf stripe. Fla.
Heterodera marioni (Cornu) Goodey, root knot. Fla.
Melanconium sabal Cke., on leaf stalks. Fla.
Meliola denticulata Wint., black mildew. P.R.
Nectria cinnabarina Tode ex Fr., on bark. Fla.
Ophiobolus verisporus Ell. & Mart., on leaf stalks. Fla.
Pestalotia palmarum Cke., leaf spot. P.R.
Phytophthora palmivora Butler, wilt. Fla.
Little leaf, cause unknown. Fla.

RUBUS (ROSACEAE)

RUBUS spp., BLACKBERRIES. (1) Cult. biennial cane types, deciduous. Derived chiefly from the following native spp. ranging from New England to the Southern and Central States: R. ALLEGHENIENSIS Porter, ALLEGHANY B., R. ARGUTUS Lk. (R. ostryifolius Rydb.), HIGHBUSH B., and R. FRONDOSUS Bigel., YANKEE B., together with other closely related forms and hybrids between them and other Rubus spp.; cult. Zones III & IV.

Apioporthe vepris (T. de Lacroix) Wehmeyer, on twigs. Va., W.Va.
Armillaria mellea Vahl ex Fr., root rot. Texas, Wash.

RUBUS spp., BLACKBERRIES -- continued.

Asterella rubi (Fckl.) Höhn., on canes. Va.

Botryosphaeria ribis (Tode ex Fr.) Gross. & Dug., on canes. Ala.

Botrytis cinerea Pers., gray mold of fruit, occasionally bud & shoot blight. General, especially in the Pacific Northwest.

Cephaleuros virescens Kze., algal leaf spot, green scurf. Fla.

Cercospora rubi Sacc. (C. bliti Tharp, C. septorioides Ell. & Ev., ? C. rubicola Thüm.) Conidial stage of Mycosphaerella confusa.

Cercosporella rubi (Wint.) Plakidas (Fusisporium rubi Wint., Ramularia r. (Wint.) Wr.), rosette, double blossom. N.Y. to Fla., Texas & Ill.

Cladosporium sp., fruit mold. Wash.

Coniothyrium fuckelii Sacc. Conidial stage of Leptosphaeria coniothyrium.

Corticium galactinum (Fr.) Burt, white root rot. Ark., Md., Va.

Cylindrosporium rubi Ell. & Morg., leaf spot. N.Car.; Texas (? Septoria rubi).

Didymella applanata (Niessl) Sacc., spur blight. Va., Wis.

Discosia artocreas Tode ex Fr., on leaves. Ala.

Elsinoë veneta (Burkh.) Jenkins (Gloeosporium venetum Speg.), anthracnose. General.

Gloeodes pomigena (Schw.) Colby, sooty blotch. Md. to N.Car. & Ind.; Texas.

Gloeosporium venetum Speg. Conidial stage of Elsinoë veneta.

G. rufomaculans (Berk.) Thüm. (G. rubi Ell. & Ev.) Conidial stage of Glomerella cingulata.

Glomerella cingulata (Ston.) Spauld. & Schrenk., on canes, ? canker. Md., Va.

Gnomonia rubi Rehm, ? cane blight. Me., N.Y., Pa., Vt.

Gymnoconia peckiana (Howe) Trott., orange rust (O,I,III). The microcyclic form, Kunkelia nitens, is reported to be more common than this on blackberries and to range farther south and perhaps west. Collections assigned to this sp. but only in part confirmed by germination tests indicate its occurrence on wild and cult. blackberries throughout the N.E. and N. Central States to Ga., Ill. & Minn.; also in the Western States to the Pacific Coast.

Hendersonia platypus Ell. & Ev., on twigs. Ill.

Hypoderma virgultorum (Pers. ex Fr.) DC., on canes. N.Car., Va.

Kuehneola uredinis (Lk.) Arth., yellow-rust, cane rust (O,I,II,III). Me. to Fla., La. & Wis.

Kunkelia nitens (Schw.) Arth., orange rust (I). General, but probably more common in the Southern, and possibly the Western States, than the demicyclic form. On cult. and wild blackberries, often perennial.

Leptosphaeria coniothyrium (Fckl.) Sacc., cane blight. N.Y. to N. Car. Texas & Wis.; Pacific Northwest.

Leptothyrium pomi (Mont. & Fr.) Sacc. (? Microthyriella rubi Petr.), fly speck (on canes & leaves). Pa. to N.Car. & Ill.

Lophodermium rubiicolum Earle, on canes. Ala., Ga.

RUBUS spp., BLACKBERRIES -- continued.

Mycosphaerella confusa Wolf (Cercospora rubi Sacc.), leaf spot, blotch. Va. to Fla. & Texas; Ill., Ind.

M. rubi Roark (Septoria rubi Westend.), leaf spot. Reports under this name, usually of the imperfect stage, have been received from nearly all the States, but possibly some confusion with S. brevispora has occurred. M. rubi in the ascigerous stage does not occur or is rare in the Pacific Northwest. A similar fungus, known only as Sphaerella ligea Sacc., occurs on Rubus in Oregon. Cylindrosporium rubi Ell. & Morg., on leaves, and Rhabdospora rubi Ell., on canes, also appear to belong to this group, but their specific identity has not been established.

(M. rubina (Pk.) Jacz.): Didymella applanata.

Peronospora rubi Rabh., downy mildew. Md., Wis.

Pezicula rubi (Lib.) Niessl, on dead canes. N.J., N.Y., N.Car., Pa., Tenn.

Pezizella oenotherae (Cke. & Ell.) Sacc., leaf spot, fruit rot. Ohio, Md., Va.

Phyllactinia corylea Pers. ex Karst., powdery mildew. Mich.

Phyllosticta spp. (P. allegheniensis Tehon & Stout, P. ruborum Sacc., P. villosa Ell. & Ev., a nom. nud.), leaf spot. Fla., Ill., N.H., N.Car., W.Va. Probably spermatial stage of Mycosphaerella spp.

Phymatotrichum omnivorum (Shear) Dug., root rot. Texas.

Physalospora obtusa (Schw.) Cke., on canes. Ga.

P. rhodina (Berk. & Curt.) Cke. (Diplodia natalensis Pole-Evans), on canes. Ala.

Phytomonas tumefaciens (EFS. & Town.) Bergey, crown gall. General.

Rhabdospora rubi Ell., on canes. Del., N.J. (? Septoria rubi).

Rhizoctonia solani Kühn, root & collar rot. Colo.

Septoria rubi Sacc., leaf spot. N.E. States to N.Car. and probably other Southern States, west to the Pacific Coast. Conidial stage of Mycosphaerella rubi.

Sphaerotheca humuli (DC.) Burr., powdery mildew. Conn. to Md., Ill. & Minn.; Pacific Northwest.

Stigmatea rubicola (Ell. & Ev.) Theiss., on leaves. N.J., N.Y., Pa.

Valsa ceratophora Tul., on canes. N.Y., Pa., Va.

Verticillium alboatrum Reinke & Berth., wilt. Calif., Minn., N.Y., Wash.

Dwarf, Rubus virus 5 Zeller ex Smith (Nanus loganobacci Holmes). Oregon.

Leaf curl, Rubus virus 3A Bennett ex Smith (Corium rubi Holmes var. beta Holmes). Mich.

Mosaic, one or more viruses, including Rubus virus 1 Rankin & Hockey ex Smith (Marmor rubi Holmes) and Rubus virus 2 Bennett ex Smith. Mass. to Va., Iowa & Wis.; Pacific Northwest.

Streak, Rubus virus 4 Wilcox ex Smith (Nanus orientalis Holmes). Ohio, Pa., Wash.

RUBUS spp., BLACKBERRIES (2) Cult., perennial cane types, mostly evergreen. Of European origin but locally naturalized in some of the Eastern and the Pacific Coast States, especially R. LACINIATUS (West.) Willd., CUTLEAF B., and

RUBUS spp., BLACKBERRIES (2) -- continued.
also R. PROCERUS P. J. Meul, HIMALAYA B., and R. ULMIFOLIUS Schott. var. INERMIS (Willd.) Focke, EVERGREEN THORNLESS B.; cult. Zone V. A few records apply also to R. FRUTICOSUS L., EUROPEAN B., and related types, rarely cult. here.

Ascospora ruborum Zeller (Hendersonia rubi (Westend.) Sacc.), cane spot. Wash.
Botrytis cinerea Pers., fruit rot, shoot blight. Pacific Coast States.
Coniothyrium fuckelii Sacc., cane blight. Oregon.
(Coryneum ruborum Oud.): Hendersonia rubi.
Elsinoë veneta (Burkh.) Jenkins, anthracnose. Oregon, Wash.
Gnomonia rubi Rehm, ? cane blight. Md.
Hapalosphaeria deformans Syd., stamen blight, dry berry. Oregon, Wash.
Hendersonia rubi (Westend.) Sacc. Conidial stage of Ascospora ruborum.
Kuehneola uredinis (Lk.) Arth., yellow rust. Pacific Coast States.
Mycosphaerella confusa Wolf (Cercospora rubi Sacc.), leaf spot, blotch. Ala., N.J., N.Car.
M. rubi Roark (Septoria rubi Westend.), leaf spot. Calif.
Pezizella oenotherae (Cke. & Ell.) Sacc., leaf spot, canker. Va.
Phomopsis sp., canker. Wash.
Phytomonas tumefaciens (EFS. & Town.) Bergey, crown gall. General.
Septoria brevispora (Sacc.) Zeller, leaf spot. Md.
Sphaerotheca humuli (DC.) Burr., powdery mildew. Oregon.
Dwarf, Rubus virus 5 Zeller ex Smith (Nanus loganobacci Holmes). Pacific Coast States.
Mosaic, undet. virus (? Rubus viruses 1 or 2, Marmor rubi Holmes). Idaho, Oregon.
Red berry, caused by feeding of mites (Eriophyes gracilis Nal.) Calif.

RUBUS spp., BLACKBERRIES (3) Native spp., chiefly those not sources of cult. vars., as R. CANADENSIS L., THORNLESS B. of New England to Ga. & Minn., and R. CUNEIFOLIUS Pursh, SAND B. of the Eastern Coastal Plain from Conn. to Fla.

Cercosporella rubi (Wint.) Plakidas, rosette. Ill., N.Car.
Corticium microsclerotia Weber, web blight. Fla.
Gloeosporium papulatum Dearn., on leaves. Tenn.
Gymnoconia peckiana (Howe) Trott., orange rust (O,I,III). Me. to Tenn. & Minn.
Kuehneola uredinis (Lk.) Arth., yellow rust (O,I,II,III). Me. to Fla., Ala. & Wis.
Kunkelia nitens (Schw.) Arth., orange rust (I). Me. to Fla., La. & Minn.
Mycosphaerella confusa Wolf (Cercospora rubi Sacc.) leaf spot, blotch. Ala., Md., N.J., W.Va.
M. rubi Roark (Septoria rubi Westend.), leaf spot. Conn. to N.Car., La. & Mich.
Peronospora rubi Wallr., downy mildew. Md.
Pezicula rubi (Lib.) Niessl, on canes. N.H., Tenn.

RUBUS spp., BLACKBERRIES (3) -- continued.

Sphaerotheca humuli (DC.) Burr., powdery mildew. Minn., Pa., Wash.
Stigmatea rubicola (Ell. & Ev.) Theiss., on leaves. N.Y., Pa., Wis.

RUBUS spp., DEWBERRIES. (1) Eastern types derived from R. FLAGELLARIS Willd., NORTHERN D., or the closely related spp. R. BAILEYANUS Britt. and R. ENSLENII Trott. (regarded as only forms of the sp. by some authors), occurring from New England to the Great Lakes and Gulf States, cult. Zone III; and in part from R. TRIVIALIS Michx., SOUTHERN D., occurring from Va. to Fla. & Texas, cult. Zone VI; also from hybrids with other Rubus spp.

Apioporthe vepris (T. de Lacroix) Wehmeyer, on stems. N.Car.
Botrytis cinerea Pers., gray mold of fruit. N.Car.
Cercosporella rubi (Wint.) Plakidas, rosette, double blossom. N.Y. to Ala., Ill. & Texas.
Collybia dryophila Fr., root rot. N.Car.
Corticium galactinum (Fr.) Burt, root rot. Md., Va.
Elsinoë veneta (Burkh.) Jenkins, anthracnose. General.
Gloeodes pomigena (Schw.) Colby, sooty blotch. N.Car., Pa.
Glomerella cingulata (Ston.) Spauld. & Shrenk, canker, fruit rot. Ga., Ill., Md., Miss.
Gnomonia rostellata (Fr.) Wehmeyer, on stems. N.Car.
Gymnoconia peckiana (Howe) Trott., orange rust (O,I,III). Me. to Va., Mo. & Minn., possibly south and west. (Some vars. are highly resistant or immune, e.g. Lucretia).
Helicobasidium purpureum (Tul.) Pat., violet root rot. N.Car., Texas.
Hypoderma virgultorum (Pers. ex Fr.) DC., on stems. N.Y., W.Va.
Irenina sanguinea (Ell. & Ev.) F.L.Stevens, black mildew, leaf spot. Ala., La.
Kuehneola uredinis (Lk.) Arth., yellow rust. Me. to Fla., Texas & Kans.
Kunkelia nitens (Schw.) Arth., orange rust (I). Conn. to Fla., Texas & Iowa.
Leptosphaeria coniothyrium (Fckl.) Sacc., cane blight, dieback. N.J. to Ala. & Texas.
Leptothyrium pomi (Mont. & Fr.) Sacc., fly speck. N.Car.
Mainsia epiphylla (Arth.) Jacks., rust (II,III). On R. trivialis, Texas.
Monochaetia desmazierii Sacc., on stems. N.Car., Tenn., Va.
Mycosphaerella confusa Wolf (Cercospora rubi Sacc.), leaf spot, blotch. N.J. to Fla., Texas & Ill.
M. rubi Roark (Septoria rubi Westend.), leaf spot. General.
Peronospora potentillae DBy., downy mildew. Conn., Ill.
P. rubi Rabh., Fla., Md., Wash., Wis.
Pezicula rubi (Lib.) Niessl, on stems. N.J., N.Y., W.Va.
Pezizella oenotherae (Cke. & Ell.) Sacc., leaf & cane spot, fruit rot. Md. to N.Car.
Phomopsis sp. and P. rubiseda Fairman, on twigs. N.Y.

RUBUS spp., DEWBERRIES (1) -- continued.

Phyllosticta dispergens Tehon, leaf spot. Ill.
P. ruborum Sacc., Miss., N.Y.
Phyllostictina carpogena Shear, fruit rot. Md., N.J., N.Y., N.Car.
Phymatotrichum omnivorum (Shear) Dug., root rot. Texas.
Physalospora obtusa (Schw.) Cke., on stems. Ala., Me., W.Va.
Phytomonas tumefaciens (EFS. & Town.) Bergey, crown gall. Conn., Fla., N.Car., Ohio.
(Rhizoctonia crocorum (Pers.) DC.): Helicobasidium purpureum.
Septoria darrowii Zeller, leaf spot. N.Y.
Sphaerotheca humuli (DC.) Burr., powdery mildew. Ill., Minn., Pa., Ohio, Idaho.
Synchytrium aureum Schroet., yellow leaf gall. Wis.
Verticillium albo-atrum Reinke & Berth., wilt. Calif.
Leaf curl, Rubus virus 3A Bennett ex Smith (Corium rubi var. beta Holmes). Mich., Ohio.
Mosaic, Rubus virus 1 Rankin & Hockey ex Smith (Marmor rubi Holmes), Conn., Mich., N.J., N.Y.; also Rubus virus 2 Bennett ex Smith, Mich., N.Y.

RUBUS spp., DEWBERRIES (2) Western types derived from R. URSINUS Cham. & Schlecht., CALIFORNIA D., and especially its var. VITIFOLIUS (Cham. & Schlecht.) Focke, GRAPELEAF D., occurring in Calif. & Oregon, cult. Zone V. Forms of the latter, perhaps influenced by hybridity, have been given distinctive names as R. loganobaccus Bailey, loganberry, and R. titanus Bailey, mammoth blackberry. A few records on R. MACROPETALUS Hook., TRAILING BLACKBERRY, occurring from Idaho to Wash. & Calif. are included.

Armillaria mellea Vahl ex Fr., root rot. Oregon.
Ascospora ruborum Zeller (Hendersonia rubi (Westend.) Sacc.), cane spot. Ala., Calif.
Cercosporella rubi (Wint.) Plakidas, rosette, double blossom. La., Miss.
Didymella applanata (Niessl) Sacc., spur blight. Oregon, Wash.
Elsinoë veneta (Burkh.) Jenkins (Gloeosporium venetum Speg.), anthracnose. General.
Gnomonia rubi Rehm, on canes. Oregon.
Gymnoconia peckiana (Howe) Trott., orange rust (O,I,III). Va.
Hapalosphaeria deformans Syd., dry berry, stamen blight. Oregon, Wash.
Kuehneola uredinis (Lk.) Arth., yellow rust (O,I,II,III). Calif.
Kunkelia nitens (Schw.) Arth., orange rust (I). Calif., Oregon, Va.
Leptosphaeria coniothyrium (Fckl.) Sacc., cane blight. General.
L. thomasiana Sacc. & Roum., cane blight. Oregon, Wash.
Mycosphaerella confusa Wolf (Cercospora rubi Sacc.), leaf spot. Ga., Miss.
M. rubi Roark (Septoria rubi Westend.), leaf spot, sometimes canker & dieback. General.
Peronospora rubi Wallr., downy mildew. Wash.

RUBUS spp., DEWBERRIES (2)

Phymatotrichum omnivorum (Shear) Dug., root rot. Texas.
Phytomonas tumefaciens (EFS. & Town.) Bergey, crown gall. General.
Pyrenopeziza rubi (Fr.) Rehm, on canes. Calif.
Rhizoctonia solani Kühn, collar rot. Wash.
Sphaerotheca humuli (DC.) Burr., powdery mildew. Pacific Northwest.
Septoria darrowii Zeller, leaf spot. Md.
(S. rubi Westend.): Mycosphaerella rubi.
Verticillium albo-atrum Reinke & Berth., wilt. Calif., N.Y.
Dwarf, Rubus virus 5 Zeller ex Smith (Nanus loganobacci Holmes). Oregon, Wash.
Mosaic, undet. virus (? Rubus virus 1 Rankin & Hockey ex Smith, Marmor rubi Holmes). Calif. & Pacific Northwest.

RUBUS spp., RASPBERRIES (1) red. Cult. red raspberries derive chiefly from R. IDAEUS L. var. STRIGOSUS (Michx.) Maxim., AMERICAN RED R., which occurs from New England to Va. and the Rocky Mts. north to Alaska; the EUROPEAN RASPBERRY, R. I. var. VULGATUS Arrhen., is represented in the ancestry of some vars. and occurs rarely as an escape; the var. ACULEATISSIMUS Reg. & Tiling., WESTERN RED R., occurs in the western part of this range; cult. Zone III.

Alternaria sp., fruit rot. Mass., N.Y.
Armillaria mellea Vahl ex Fr., root rot. Oregon, Wash.
Ascospora ruborum Zeller (Hendersonia rubi (Westend.) Sacc.), cane spot, dieback. Mass., Oregon, Wash.
Botryosphaeria ribis var. chromogena Shear et al., on canes. Fla.
Botrytis cinerea Pers., gray mold of fruit, sometimes flower & shoot blight. Cosmopolitan.
Cercospora rubi Sacc. Conidial stage of Mycosphaerella confusa.
Cercosporella rubi (Wint.) Plakidas, double blossom, rosette. Ill., Md., N.Y., Pa.
Clypeosphaeria hendersonia (Ell.) Sacc., on dead canes. Mich., N.J., N.Y.
Coryneum microstictum Bork. & Br., on canes. Me. (Ascospora ruborum ?).
Cuscuta gronovii Willd., dodder. Conn., Ill., Wis.
Cylindrosporium rubi Ell. & Morg. (? Septoria rubi Westend.), leaf spot. Pa. to Texas & Wis.
Cytospora sp. and C. rubi Schw., on dead stems. Idaho, N.J., Oregon, Pa.
Didymella applanata (Niessl) Sacc., spur blight (gray bark). General.
Didymosphaeria manitobensis Ell. & Ev., on leaves. Mich.
Elsinoë veneta (Burkh.) Jenkins (Gloeosporium venetum Speg.), anthracnose. General (but less common on red than on black raspberries).
Gloeosporium allantosporum Fautr., anthracnose, dieback. Oregon, Wash.
(G. cingulatum Atk.): Glomerella cingulata.

RUBUS spp., RASPBERRIES (1) -- continued.

(G. rubicolum Ell. & Ev.): Glomerella rubicola.

(G. venetum Speg.): Elsinoë veneta.

Glomerella cingulata (Ston.) Spauld. & Schrenk, canker, dieback. Ark., Md., N.J., Ohio, R.I., W.Va.

G. rubicola (Ell. & Ev.) Spauld. & Schrenk, white bud, canker. Ill., N.J., W.Va.

Gnomonia depressula Karst., on dead canes. Alaska.

G. rostellata (Fr.) Wehmeyer, on stems. Iowa.

G. rubi Rehm. Oregon.

Graphium gracile Pk., on leaves. Ind., N.Y., Wis.

Gymnoconia peckiana (Howe) Trott., orange rust. Although sometimes reported on red raspberry (N.E. and Great Lakes States to Pacific Coast) these reports are not authenticated. There are no reports of the short-cycle rust, Kunkelia nitens, on this host.

Hypoderma virgultorum (Pers. ex Fr.) DC., on dead canes. Mass., N.H., Oregon.

Kuehneola uredinis (Lk.) Arth., yellow rust (O,I,II,III). Ill., Pa. (Not recorded on this host by Arthur).

Leptosphaeria conicthyrium (Fckl.) Sacc. (Coniothyrium fuckelii Sacc.), cane blight, leaf spot. General.

L. thomasiana Sacc. & Roum., cane blight. Oregon.

Leptothyrium pomi (Mont. & Fr.) Sacc., fly speck. Mass., Ind., Ky.

Macrophoma rubi Tehon, canker. Ill.

Monochaetia desmazierii Sacc., on leaves. Alaska, Iowa.

Mycosphaerella confusa Wolf (Cercospora rubi Sacc.), leaf spot. Ga.

M. fructicum Starb., on leaves. Alaska.

M. rubi Roark (Septoria rubi Westend.), leaf spot, cane spot. General.

(M. rubina (Pk.) Jacz.): Didymella applanata.

Nectria cinnabarina Tode ex Fr., on canes. Alaska.

Pezicula rubi (Lib.) Niessl, on dead canes. Me., N.Y.

Pezizella oenotherae (Cke. & Ell.) Sacc., leaf & cane spot. Md., Mo., Va.

Phoma sp. (? P. idaei Oud., also reported as P. rubicola Brun.), on canes & spurs. Minn., N.Y. Conidial stage of Didymella applanata.

Phomopsis sp., on canes. Iowa.

Phragmidium rubi-idaei (DC.) Karst., leaf rust, also cane and Western rust (O,I,II,III). N.E. and N. Central States to Colo. and Pacific Northwest.

Phyllactinia corylea (Pers. ex Karst.) powdery mildew. Mich.

Phyllosticta sp. and P. bicolor Pk., on leaves. Fla., N.Y., Wash.

Phyllostictina carpogena Shear, fruit rot. Md.

Phymatotrichum omnivorum (Shear) Dug., root rot. Texas.

Physalospora obtusa (Schw.) Cke., on dead canes, ?blight. Iowa, Md., Mich., Mo., N.Dak., Pa.

Phytomonas tumefaciens (EFS. & Town.) Bergey, crown gall. General.

Pucciniastrum americanum (Farl.) Arth., late leaf rust (II,III). N.E. States to N.Car., Ill. & Idaho. O and I on Picea glauca.

RUBUS spp., RASPBERRIES (1) -- continued.

Pyrenopeziza rubi (Fr.) Rehm, on dead canes. Calif., N.Dak.
Rhabdospora rubi Ell. (? Septoria rubi Sacc.), cane spot. Ala., Ill., N.J., Pa., Alaska.
Rhizoctonia solani Kühn, root & collar rot. Colo., Idaho, Wash.
Rhizopus nigricans Ehr., black mold of fruit. Cosmopolitan.
Septoria darrowii Zeller, leaf spot. Md., N.Car., Wis.
(S. rubi Westend.): Mycosphaerella rubi.
(Sphaeropsis rubicola Cke. & Ell.): Physalospora obtusa.
Sphaerotheca humuli (DC.) Burr., powdery mildew. N.E. States to Ill. & Minn., Calif. & Pacific N.W.
Sphaerulina intermixta (Berk. & Br.) Sacc., on canes. Oregon.
Stigmatea rubicola (Ell. & Ev.) Theiss., black spot on canes & leaves. Mont., N.Mex., N.Y., Vt., Wis.
Valsa ambiens Pers. ex Fr., on dead canes. N.Y., N.Dak.
Verticillium albo-atrum Reinke & Berth., wilt. Oregon, N.Y.
Xylaria sp., root rot. Wash.
Chlorosis, -- mineral deficiency, usually of iron, associated with alkaline soil. Western States.
Leaf curl, Rubus viruses 3 and 3A Bennett ex Smith. (Corium rubi vars. alpha and beta Holmes). General. The red raspberry is a common host, with indistinguishable symptoms, for the two vars. of the virus.
Mosaic (green mosaic, red raspberry mosaic), Rubus virus 1 Rankin & Hockey ex Smith (Marmor rubi Holmes). General.
Yellow mosaic, Rubus virus 2 Bennett ex Smith. N.Y. to Md. & Wis., and probably in other raspberry districts. ("Yellows" applied to Rubus is an ambiguous term, not equivalent to yellow mosaic; probably a complex disease involving both types of mosaic and sometimes leaf curl.)

RUBUS spp., RASPBERRIES (2) black. Derived from R. OCCIDENTALIS L., BLACKCAP R., including the amber-fruited var. PALLIDUS Bailey, ranging from New England to Ga., Colo. and the Pacific Northwest; cult. Zone III. R. LEUCODERMIS Torr. & Gray, WHITEBARK R., occurring from Mont. to Utah, central Calif. and Wash., also has given rise to hort. vars. PURPLECANE RASPBERRIES are hybrids of R. occidentalis and red raspberries, R. neglectus Pk. is a naturally occurring hybrid of this nature.

Ascospora ruborum Zeller, cane spot, dieback. Oregon.
Cercosporella rubi (Wint.) Plakidas, double blossom. Ky.
Clypeosphaeria hendersonia (Ell.) Sacc., on dead canes. N.J., T.H.
Coleroa chaetomium (Kze.) Rabh. var.americana Petr., on leaves. Wash. (? Stigmatea rubicola.)
Cryptostictis ludibunda Vester., on stems. Va., Vt.
Cylindrosporium rubi Ell. & Morg. (? Septoria rubi Sacc.), leaf spot. Miss.
Didymella applanata (Niessl) Sacc., spur blight. Kans., Oregon, Pa., Wis.

RUBUS spp., RASPBERRIES (2) -- continued.

Didymosphaeria manitobensis Ell. & Ev., on leaves. Mont.

Elsinoë veneta (Burkh.) Jenkins (Glocosporium venetum Speg.), anthracnose. N.E. States to Md., Kans. & Pacific Northwest.

? Erwinia amylovora (Burr.) Winslow et al., flower & twig blight. Pa.

Gloeosporium allantosporum Fautr., anthracnose. Oregon, Wash.

Glomerella cingulata (Ston.) Spauld. & Schrenk, canker, dieback. Ky., Mich., Mo., Ohio.

Gnomonia rubi Rehm, on dead canes. Oregon.

Gymnoconia peckiana (Howe) Trott., orange rust (O,I,III). N.E. States to La. & Minn.; Pacific Northwest.

Kuehneola uredinis (Lk.) Arth., yellow rust (O,I,II,III). Del. to Mo. & Wis. (Not recorded on this host by Arthur).

Kunkelia nitens (Schw.) Arth., orange rust (I). Ill., Ind., Mich., Ohio.

Leptosphaeria coniothyrium (Fckl.) Sacc., cane blight. N.H. to Ga., Kans. & Wis.; Oregon.

Macrophoma conica Pass., on canes. Va.

Mycosphaerella confusa Wolf (Cercospora rubi Sacc.), leaf spot. Ala., Fla., Ga.

M. rubi Roark (Septoria rubi Westend.), leaf spot. Vt. to S.Car., Ark. & Nebr.; Wash.

Peronospora rubi Rabh., downy mildew. Wash.

Pezizella oenotherae (Cke. & Ell.) Sacc., cane & leaf spot. Md., Ohio.

Phoma sp., cane blight. N.Y.

Phragmidium rubi-idaei (DC.) Karst., leaf rust, sometimes on stems (O,I,II,III). Calif., Mass., Oregon, Wis.

Phyllosticta rubicola Rabh., on leaves. Ind.

Phytomonas tumefaciens (EFS. & Town.) Bergey, crown gall. General.

Pucciniastrum americanum (Farl.) Arth., late rust (II,III). N.E. States to Va., Iowa & N.Dak.

Pyrenopeziza rubi (Fr.) Rehm, on dead canes. Oregon.

Septoria darrowii Zeller, leaf spot. Md.
(S. rubi Westend.): Mycosphaerella rubi.

Sphaerotheca humuli (DC.) Burr., powdery mildew. Minn., N.Y., Ohio, Oregon.

Sphaerulina intermixta (Berk. & Br.) Sacc., on dead canes. Oregon.

Stigmatea rubicola (Ell. & Ev.) Theiss., black spot on canes & leaves. Md., Nebr., Wis.

Verticillium albo-atrum Reinke & Berth., wilt (Western bluestem). Mass. to N.J. & Ohio; Oregon, Wash.

Leaf curl, Rubus virus 3A Bennett ex Smith (Corium rubi var. beta Holmes). N.Y. to Pa., Ind. & Mich., and probably elsewhere.

Mosaic (mild mosaic), Rubus virus 1 Rankin & Hockey ex Smith (Marmor rubi Holmes). General.

Yellow mosaic, Rubus virus 2 Bennett ex Smith. Ill., Md., Mich., N.Y., Ohio, Pa., Wash.; probably general.

RUBUS spp., RASPBERRIES (2) -- continued.

Streak (Eastern bluestem, rosette), Rubus virus 4 Wilcox ex Smith (Nanus orientalis Holmes). Conn. to Md., Ill. & Wis.; Pacific Northwest. (A mild and a severe form have been described but are thought to be caused by only strains of one virus. The mild form causes "crumbly berries" sometimes reported as a distinct disease; the severe form causes necrotic streaking, dwarfing, and sometimes witches'-brooms.)

RUBUS spp., RASPBERRIES, (3) ORIENTAL, as R. ELLIPTICUS Sm., GOLDEN EVERGREEN R., R. HAWAIIENSIS Gray, R. PHOENICOLASIUS Maxim., WINEBERRY, and R. ROSAEFOLIUS Sm., ROSELEAF R.; cult. for fruit & ornament chiefly in the South and sometimes naturalized in the American tropics.

Corticium galactinum (Fr.) Burt, root rot. Md., Va.
Irene calostroma (Desm.) Höhn., black mildew. T.H.
Kuehneola uredinis (Lk.) Arth., yellow rust (O,I,II,III). T.H.
Leptosphaeria coniothyrium (Fckl.) Sacc., cane blight. Va.
Mycosphaerella rubi Roark (Septoria rubi Westend.), leaf spot. Md. (S. darrowii Zeller perhaps also present).
Phomopsis rubiseda Fairman, on canes. N.Y.
Stictis hawaiiensis Cash, on living stems. T.H.
Leaf curl, ? Rubus virus 3 Bennett ex Smith (Corium rubi Holmes). N.Y.
Mosaic, ? Rubus virus 1 Rankin & Hockey ex Smith (Marmor rubi Holmes). Oregon, Pa.

RUBUS spp., RASPBERRIES (4) flowering, as R. ODORATUS L., PURPLE FLOWERING R., FRAGRANT THIMBLEBERRY, In N.E. States to Ga. and Mich., cult. Zone III; and R. DELICIOSUS Torr., WHITE FLOWERING R., BOULDER R. in Colo. to Ariz. and N. Mex., cult. Zone V.

Gnomonia rostellata (Fr.) Wehmeyer, on canes. W.Va.
Leptothyrium pomi (Mont. & Fr.) Sacc., fly speck on canes. N.Y.
Leptosphaeria coniothyrium (Fckl.) Sacc., cane blight. Me., W.Va.
Monochaetia desmazierii Sacc., on leaves. Me.
Pezicula rubi (Lib.) Niessl, on dead canes. Va.
Phragmidium peckianum Arth., rust (O,I,II,III). On R. deliciosus, Mont. to Ariz. & N.Mex.
P. rubi-odorati Diet., rust (O,I,II,III). On R. odoratus, Me. to N.Car. & Mich.
Phomopsis rubiseda Fairman, on canes. N.Y.
Phyllosticta variabilis Pk., leaf spot. N.Y., Vt.
Physalospora obtusa (Schw.) Cke., on canes. N.Y.
Pyrenopeziza lacerata (Cke. & Pk.) Sacc., on dead canes. N.Y., W.Va.
Sphaerotheca humuli (DC.) Burr., powdery mildew. N.E. States to Va. & Ohio.
Leaf curl, ? Rubus virus 3A Bennett ex Smith (Corium rubi Holmes). N.Y.
Mosaic, ? Rubus virus 1 Rankin & Hockey ex Smith (Marmor rubi Holmes). N.Y.

RUBUS spp., THIMBLEBERRIES (and others). Spp. native to N. America, bearing edible fruit, sometimes grown for ground cover or ornament, not otherwise classified, as R. CHAMAEMORUS L., CLOUDBERRY, of northern New England to Alaska; R. parviflorus Nutt., WESTERN THIMBLEBERRY, ranging from the Great Lakes to Calif. and Alaska; R. PUBESENS Raf. (R. triflorus Richards), DWARF RED BLACKBERRY, New England to Alaska; R. SPECTABILIS Pursh, SALMONBERRY, northern Rocky Mts. to Calif. and Alaska.

Aposphaeria major Syd., on stems. Utah.
Botrytis cinerea Pers., flower & shoot blight, gray mold of fruit. Alaska.
Coccomyces rubi (Fr.) Karst., on fallen leaves. Calif.
Gnomonia rostellata (Fr.) Wehmeyer, on dead stems. Calif.
Gymnoconia peckiana (Howe) Trott., orange rust (O,I,III). On R. pubescens. Me., N.H., Wis.
Hypoderma virgultorum (Pers. ex Fr.) DC., on dead stems. Alaska.
Kuehneola uredinis (Lk.) Arth., yellow rust (O,I,II,III). On R. pubescens, Mass., Mich., N.Y.
Kunkelia nitens (Schw.) Arth., orange rust (I). On R. parviflorus. Calif.; on R. pubescens, Va.
Leptosphaeria coniothyrium (Fckl.) Sacc., canker, blight. Mass., Va.
Leptothyrium clypeosphaericoides Sacc., on dead stems. Alaska.
Marssonina potentillae (Desm.) Magn. var. tormentillae Trail., leaf spot. Wis.
Mycosphaerella rubi Roark (Septoria rubi Westend.), leaf spot. On various spp., Wis. to Calif. & Alaska.
Nectria cinnabarina Tode ex Fr., on stems, coral spot. Alaska.
Phragmidium occidentale Arth., rust (O,I,II,III). On R. parviflorus, Mich. to N.Mex., Wash. & Alaska.
P. rubi-idaei (DC.) Karst., rust (O,I,II,III). On R. spectabilis, Oregon & Wash.
Phyllosticta dearnessii Sacc., on leaves of R. pubescens. N.Y.
Pucciniastrum arcticum (Lagerh.) Tranz., rust (II,III). On R. chamaemorus, Alaska; on R. pubescens, New England to Minn.
Pyrenopeziza rubi (Fr.) Rehm, on dead stems. Calif.
Synchytrium aureum Schroet., leaf gall. On R. pubescens. Wis.
Mosaic, ? Rubus virus 1 Rankin & Hockey ex Smith (Marmor rubi Holmes). Oregon.

(DIVISION OF MYCOLOGY AND DISEASE SURVEY).

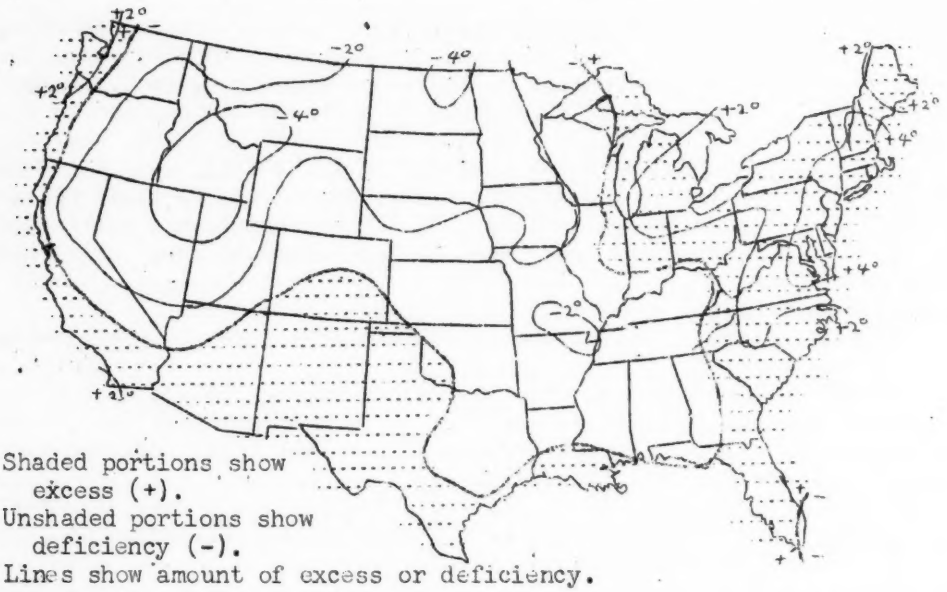

Figure 1. -- Departure of Mean Temperature from the Normal for May 1942.

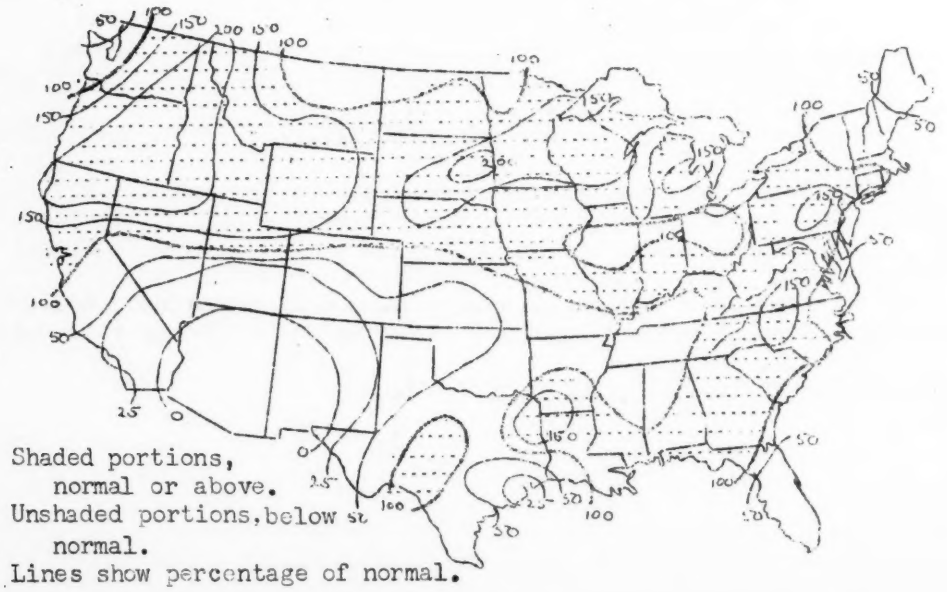

Figure 2. -- Percentage of Normal Precipitation for May 1942.

MAY WEATHER

(U. S. Department of Commerce, Weather Bureau, Weekly Weather and Crop Bulletin for the week ending June 2, 1942).

Figure 1 shows that the temperature for May 1942, averaged approximately normal throughout the southern half of the country, with the monthly means ranging from 1° to 2° above. In the Northeast the month was considerably warmer than normal, but the Northwest and Great Basin had minus temperature departures of 3° to 5°. For the country as a whole the average was approximately normal.

Figure 2 shows that precipitation was very unevenly distributed geographically. The amounts were again heavy, ranging up to one-and-a-half to more than twice the normal, in most sections from the Lake region westward. They were substantially above normal in the East also, except the extreme Northeast and along the Atlantic coast. On the other hand a large southwestern area had very little precipitation. Marked contrasts may be seen in many nearby sections, such as New Jersey compared with northeastern Pennsylvania, southeastern with southwestern Virginia, northeastern with northwestern Florida, the coast sections with eastern interior Texas, southern with northern California, and western with eastern Washington.